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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,677	11/26/2003	Michael S. Murley	149-0166US	8890

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EXAMINER	
LE, UYEN T	

ART UNIT	PAPER NUMBER
2163	

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,677	MURLEY ET AL.	
	Examiner	Art Unit	
	Uyen T. Le	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,13-18,23-29,39-42,45,46 and 48-51* is/are rejected.

7)☐ Claim(s) *6-12,19-22,30-38,43,44 and 47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-12, 25-40, 41-44, 49-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because it is not clear what is considered "substantially" at claims 1, 25, 41, 49. Furthermore, claim 35, "the act of removing" lacks antecedent basis. Claim 35 is being examined as depending from claim 34.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 13, 25, 41, 45, 49 are rejected under 35 U.S.C. 102(a), (e) as being anticipated by Sicola et al (US 6,618,794).

Regarding claim 1, Sicola discloses an unobtrusive database object copy method (see the abstract). The claimed "identifying one or more source database objects" is met

when Sicola shows a selected volume or logical unit of the storage system (see column 1, line 40- column 2, line 19). Identification has to be made in the selection process of Sicola. The claimed "creating a snapshot...source database objects" reads on the fact that a snapshot is created at a point in time and this process does not interrupt access to the primary volume (see column 1, lines 65-67). The claimed "making the snapshot consistent as of the point-in-time" is met by the fact that the snapshot of Sicola is a virtual copy of a selected subset of the storage system (see column 1, lines 40-47).

Regarding claim 13, Sicola discloses all the claimed subject matter of "identifying...database" (see column 1, line 40- column 2, line 19), "determining a point-in-time" (see step 305, Figure 3, time when host issues a request), "obtaining a prior copy...point-in-time" (see step 300, Figure 3). Furthermore, the method of Sicola clearly makes the prior copy consistent as of the point-in-time since the snapshot of Sicola is a virtual copy of a selected subset of the storage system (see column 1, lines 40-47).

Regarding claim 25, Sicola discloses the claimed method of "identifying...in a database" (see column 1, line 40- column 2, line 19), "determining a point-in-time" (see step 305, Figure 3, time when host issues a request), "creating a snapshot...in the database" (see step 300, Figure 3, column 1, lines 65-67), "making the snapshot consistent as of the point-in-time" (see column 1, lines 40-47).

Claims 41, 45, 49 correspond respectively to a computer program product to perform the method of claims 1, 13, 25, thus are rejected for the same reasons stated in claims 1, 13, 25 discussed above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 2, 3, 14, 15, 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sicola et al (US 6,618,794).

Regarding claims 2, 3, 14, 15, 26, 27, Sicola does not specifically show identifying tables and indexes associated with the tables in a relational database. However, the method of Sicola identifies objects in a database. Furthermore, relational databases are well known in the art to be commonly used to facilitate searching. Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed features while implementing the method of Sicola in order to create snapshot

for selected tables and associated indexes instead of the entire relational database, thus saving processing time and resources.

4. Claims 4, 5, 16, 17, 18, 23, 24, 28, 29, 39, 40, 42, 46, 48, 50, 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sicola et al (US 6,618,794), in view of Huxoll (US 2003/0093444).

Regarding claim 4, although Sicola does not specifically show generating a snapshot using one or more intelligent storage devices, it is well known in the art to use such devices for storage as shown by Huxoll (see 0048). Therefore, it would have been obvious to one of ordinary skill in the art to use such intelligent storage devices while implementing the method of Sicola in order to meet users requirement for the most appropriate snapshot methodology as taught by Huxoll.

Regarding claims 5, 18, 29, the snapshot in the method of Sicola is clearly physically consistent since it is a virtual copy of a selected subset of the storage system (see column 1, lines 40-47). Although Sicola does not specifically show making the snapshot transactionally consistent, it is well known in the art as shown by Huxoll to use a snapshot to provide a full point-in-time restore point (see 0050, Huxoll). Therefore, it would have been obvious to one of ordinary skill in the art to make the snapshot in the method of Sicola physically and transactionally consistent in order to use it in a recovery process as taught by Huxoll.

Regarding claims 16, 28, although Sicola does not specifically show determining a point-in-time that is prior to the initiation of the unobtrusive database object copy

method, the claimed feature merely reads on the fact that it is well known in the art to make a series of snapshots as shown by Huxoll (see the abstract). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed features while implementing the method of Sicola in order to make a series of snapshots for recovery purpose as taught by Huxoll.

Regarding claim 17, although Sicola does not specifically show obtaining a prior copy against which database log entries may be applied, it is well known in the art as shown by Huxoll to perform recovery from database logs (see 0066, Huxoll). Therefore, it would have been obvious to one of ordinary skill in the art to include obtaining a prior copy against which database log entries may be applied while implementing the method of Sicola in order to recover from database logs as taught by Huxoll.

Regarding claims 23, 39, although Sicola does not specifically show substituting the point-in-time consistent copy for the source database objects in the database, Huxoll shows that a prior copy made consistent in time can be a restore point (see 0050). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed feature while implementing the method of Sicola in order to restore the database object to a consistent point in case of failure.

Claims 24, 40 merely recite operations indispensable for ensuring substitution of the consistent copy in the database. It would have been obvious to one of ordinary skill in the art to include the claimed operations while implementing the method of Sicola and Huxoll in order to transition from the database objects to the point-in-time consistent copies.

Claims 42, 46, 50 correspond respectively to a computer program product to perform the method of claims 5, 18, 29, thus are rejected for the same reasons stated in claims 5, 18, 29 discussed above.

Claims 48, 51 recite the limitations of claim 23 in form of a computer program product, thus are rejected for the same reasons stated in claim 23 discussed above.

Allowable Subject Matter

5. Claims 6-12, 19-22, 30-38, 43, 44, 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to overcome the rejection under 35 U.S.C. 112, second paragraph discussed above.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not disclose or make obvious:

- identifying inflight units of works associated with source database objects as of the point-in-time wherein each inflight unit of work is associated with one or more database object updates and removing each update associated with each identified inflight unit of work from the snapshot, in combination with all the limitations recited in claims 6, 30, 43
- identifying inflight units of work having an earliest start time closer to the creation time of a prior consistent copy than a start time of any other inflight units of work associated with the source database objects as of the point-in-time wherein each inflight unit of work is associated with one or more database object updates, applying database log entries to the prior copy from the creation time until the

earliest start time and applying database log entries to the prior copy from the earliest start time until the point-in-time only if they are not associated with inflight units of work as recited in claims 19, 47.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wang et al (US 2005/0289533) teach updating a software image using incremental restore point.

Wikle et al (US 6,202,136) teach creating internally consistent copy of an actively updated data set without specialized caching hardware.

Kleiman et al (US 6,604,118) teach maintaining a set of snapshots for file system transfer.

Werner et al (US 2004/0260896) teach consistent copying of storage volumes.

Boyd et al (US 2004/0139367) teach maintaining data integrity.

LeCrone et al (US 7,024,528) teach storage automated replication processing.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen T. Le whose telephone number is 571-272-4021. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

28 April 2006

UYEN LE
PRIMARY EXAMINER